

Cardiac Surgical Diseases

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Cardiac Surgical Diseases

CAD

Aortic Valve

↳ Stenosis

↳ Regurgitation

Mitral Valve

↳ Stenosis

↳ Regurgitation

Heart Failure

↳ Assist Devices

↳ Transplantation

Arrhythmia

↳ Atrial Fibrillation

Tumors

↳ Benign

↳ Malignant

Aortic Disease

Endocarditis



Indications

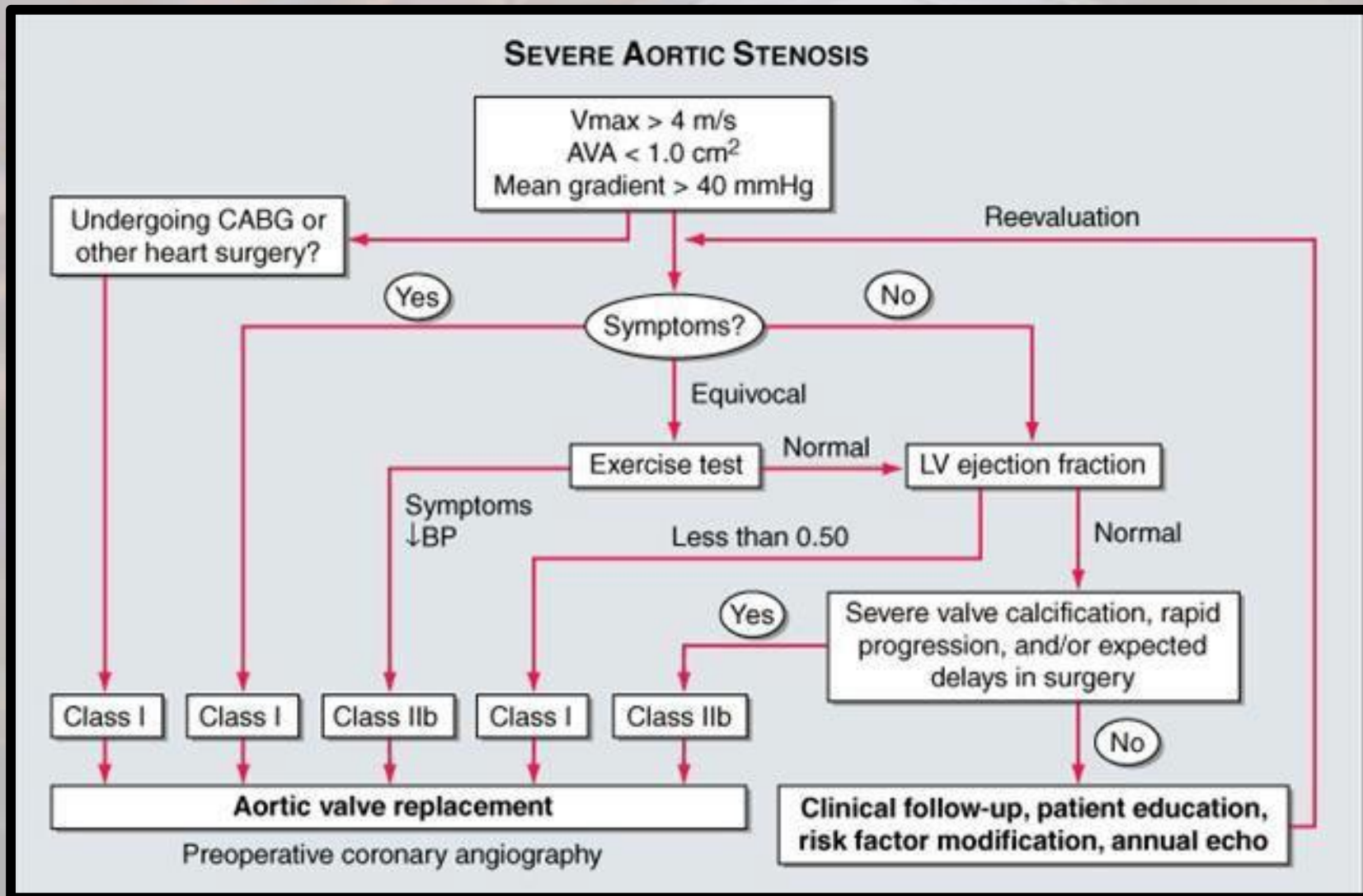
Coronary Artery Bypass Surgery

Indication	Asymptomatic or Mild Angina	Stable Angina	Unstable Angina/NSTEMI	Poor LV Function
Left main stenosis >50%	Class I	Class I	Class I	Class I
Stenosis of proximal LAD and proximal circumflex >70%	Class I	Class I	Class I	Class I
3-vessel disease	Class I	Class I		Class I, with proximal LAD stenosis
2-vessel disease		Class I if there is large area of viable myocardium in high-risk area	Class IIb	

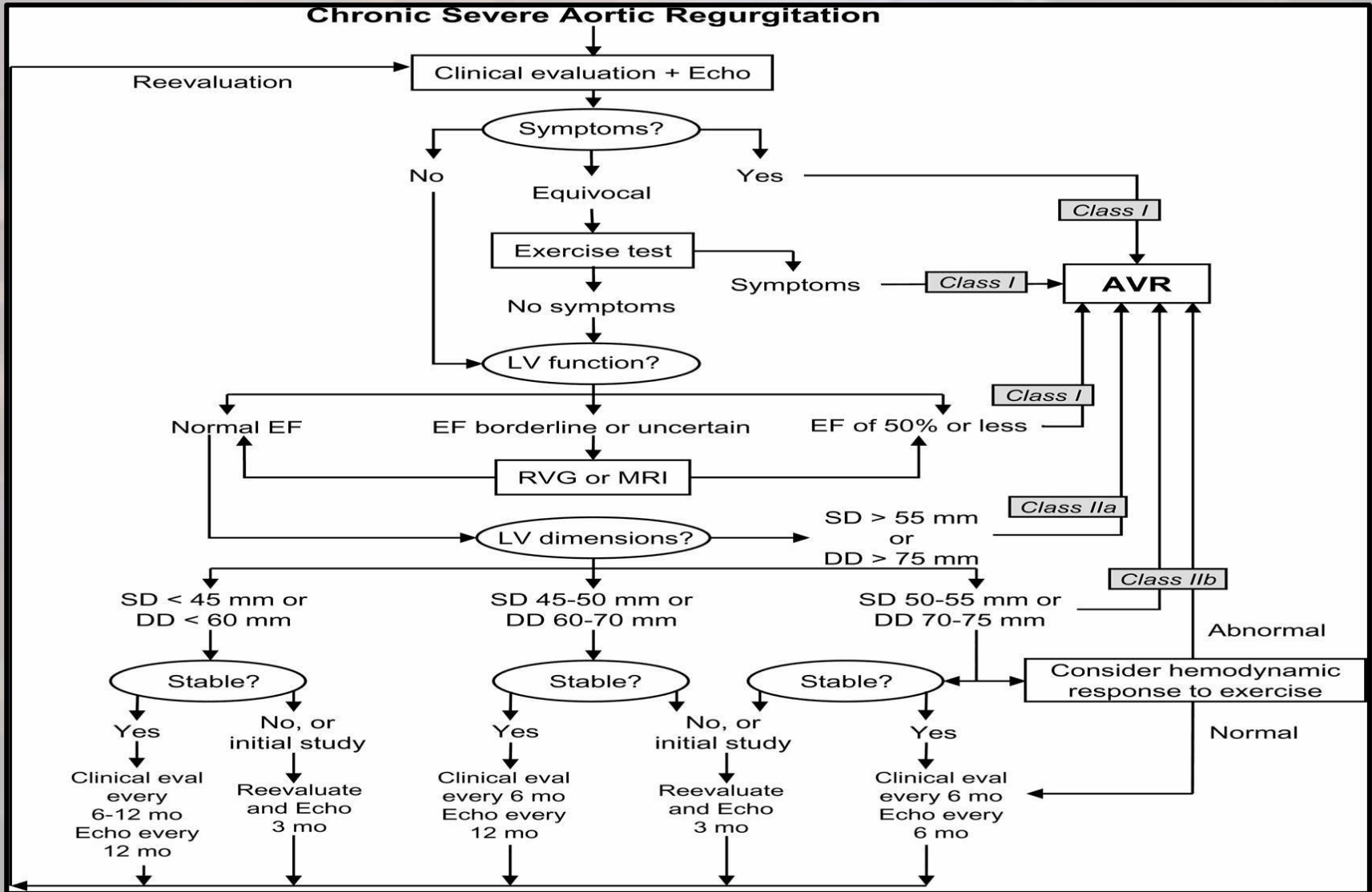
Coronary Artery Bypass Surgery

Revascularization	CABG			DES		
	No-risk	DM	LVD	No-risk	DM	LVD
1-vessel	N	N	N	Y	Y	Y
Proximal LAD	Y	Y	Y	N	N	N
2-vessel without LAD	N	N	N	Y	Y	Y
2-vessel with LAD	Y	Y	Y	Y	Y	Y
2-vessel + proximal LAD	Y	Y	Y	N	N	N
3-vessel	Y	Y	Y	C	C	C
3-vessel + proximal LAD	Y	Y	Y	N	N	N
LMC ± other lesions	Y	Y	Y	N	N	N

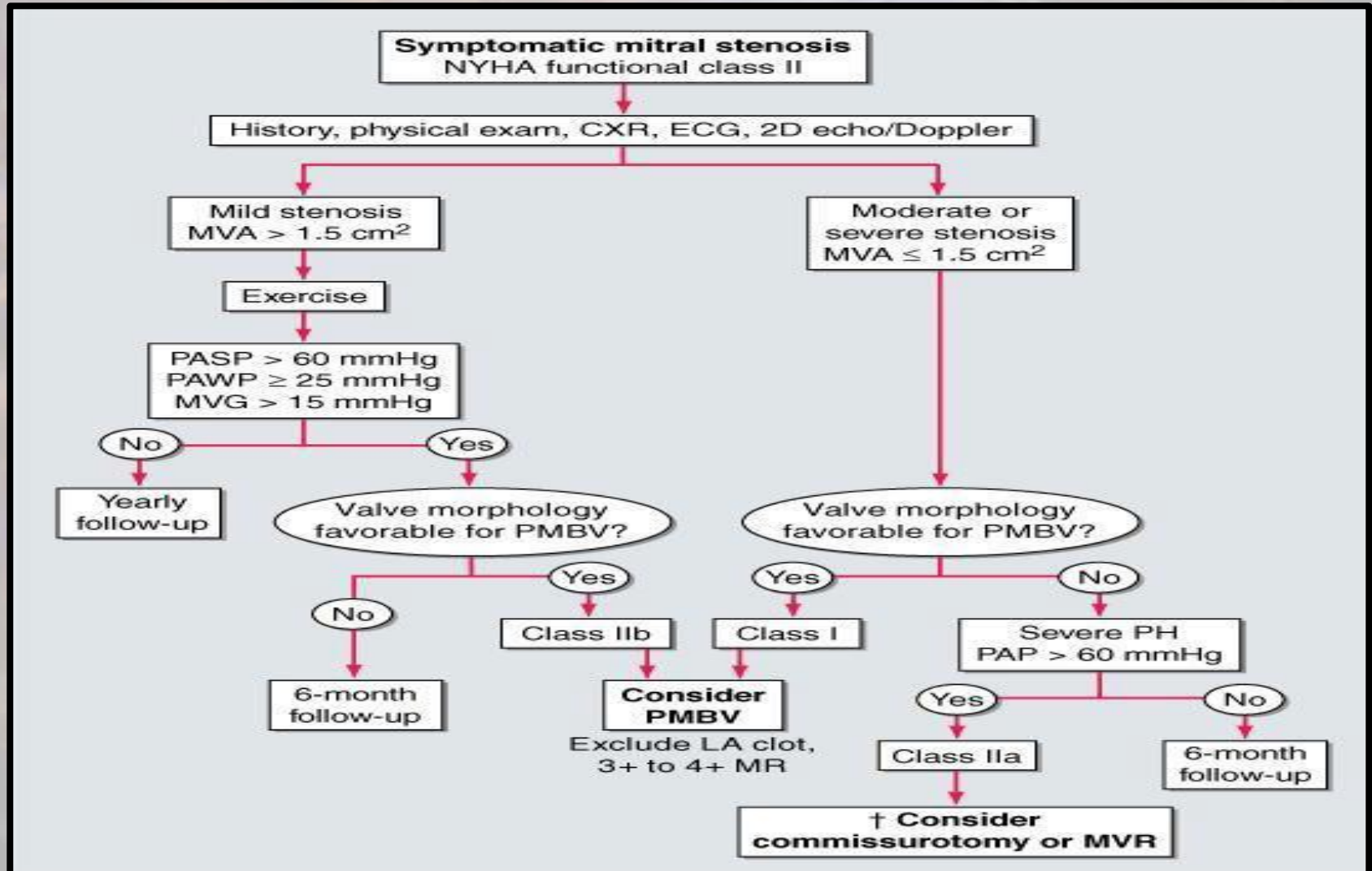
Aortic Valve



Aortic Valve

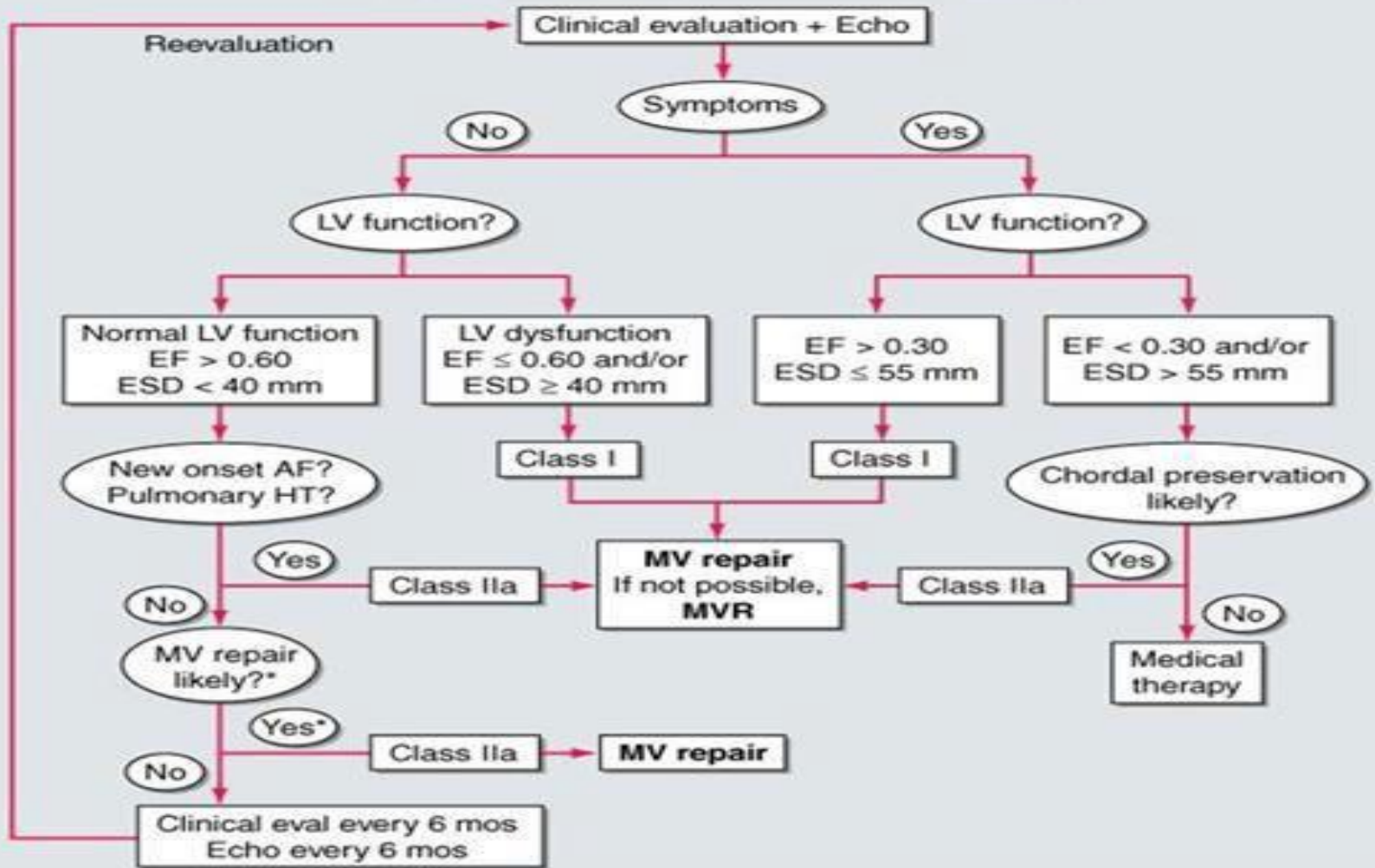


Mitral Valve



Mitral Valve

CHRONIC SEVERE MITRAL REGURGITATION



Aortic Disease

When to Operate ?

> 6.0 cm

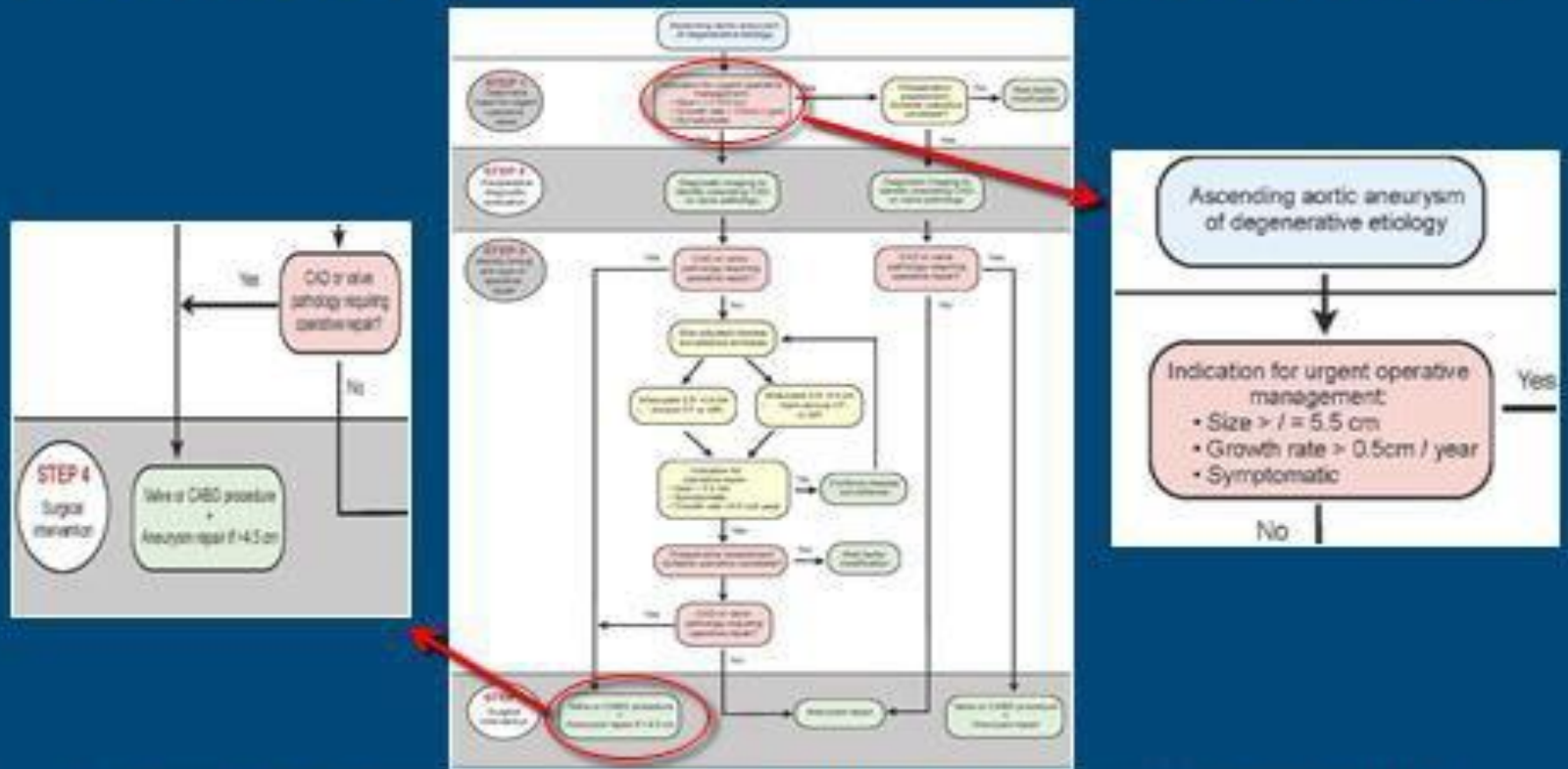
> 5.5 cm



> 6.5 cm

Aortic Disease

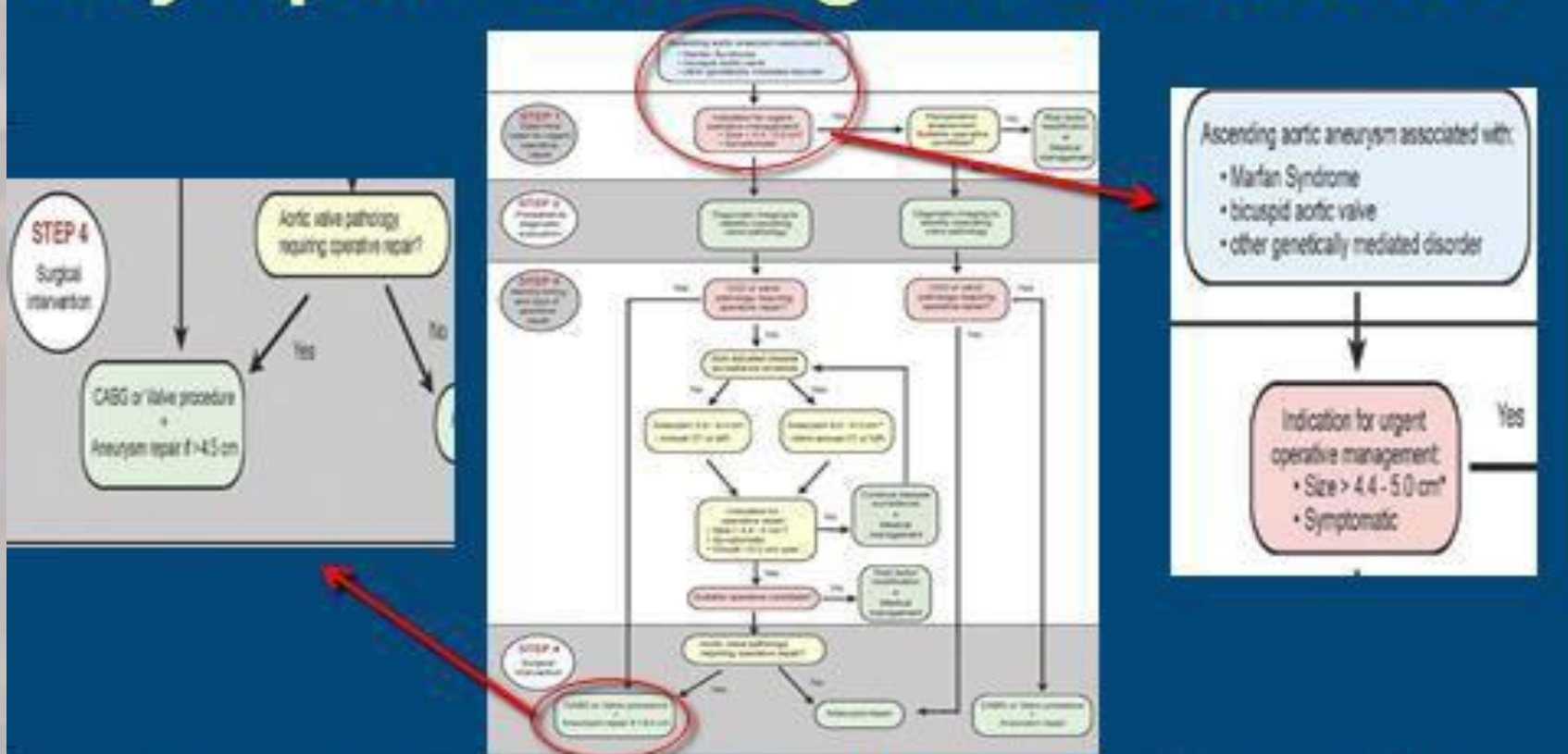
Asymptomatic/ Low Risk Patients



American College of Cardiology Foundation, et al. J Am Coll Cardiol 2010;55:1509-1544

Aortic Disease

Asymptomatic/ High Risk Patients



American College of Cardiology Foundation, et al. J Am Coll Cardiol 2010;55:1509-1544

Heart Failure

Indications for Heart Transplant:

- Cardiogenic shock requiring mechanical assistance.
- Refractory heart failure with continuous inotropic infusion.
- NYHA functional class 3 and 4 with a poor 12 month prognosis.
- Progressive symptoms with maximal therapy.
- Severe symptomatic hypertrophic or restrictive cardiomyopathy.
- Medically refractory angina with unsuitable anatomy for revascularization.
- Life-threatening ventricular arrhythmias despite aggressive medical and device interventions.
- Cardiac tumors with low likelihood of metastasis.
- Hypoplastic left heart and complex congenital heart disease.

Heart Failure

Table 3. Contraindications to cardiac transplantation.⁹

- Pulmonary hypertension (TPG > 15 mm Hg, SPAP > 50 mm Hg, PVR > 4 WU, PVRI > 6)
- Systemic disease (anticipated to limit long-term survival)
- Elevated creatinine (> 200 μ mol/L)
- Active infection
- Psychosocial (substance abuse, smoking, medical noncompliance)
- Malignancy (within 5 years)
- Morbid obesity (> 140% ideal body weight)
- Marked cachexia (< 60% ideal body weight)
- Osteoporosis
- Peripheral or cerebrovascular disease
- Diabetes mellitus with end organ damage

Heart Failure

Ventricular Assist Devices:

Indications

Frequent hospitalisations for HF

Intolerance to neurohormonal antagonists

NYHA IIIb–IV functional limitations despite OMT

End-organ dysfunction owing to low CO

Increasing diuretic requirement

CRT nonresponder

Inotrope dependence

Low peak Vo_2 (<14mL/kg/min)

Absolute Contraindications

Irreversible hepatic disease

Irreversible renal disease

Irreversible neurological disease

Medical nonadherence

Severe psychosocial limitations

HF = Heart failure; OMT = optimal medical therapy; NYHA = New York Heart Association; CO = cardiac output; CRT = cardiac resynchronisation therapy. Adapted from Peura et al.¹¹ and published with the permission of the American Heart Association.

Endocarditis

Table 2. Indications for and Timing of Surgery in Patients with Left-Sided, Native-Valve Infective Endocarditis.*

Indication	Timing of Surgery†
Heart failure	
Aortic or mitral-valve infective endocarditis with severe acute regurgitation or obstruction causing refractory pulmonary edema or cardiogenic shock	Emergency
Aortic or mitral-valve infective endocarditis with fistula into a cardiac chamber or pericardium causing refractory pulmonary edema or cardiogenic shock	Emergency
Aortic or mitral-valve infective endocarditis with severe acute regurgitation or obstruction and persistent heart failure or signs of poor hemodynamic tolerance (early mitral-valve closure or pulmonary hypertension)	Urgent
Aortic or mitral-valve infective endocarditis with severe regurgitation and heart failure easily controlled with medical treatment	Elective
Uncontrolled infection	
Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation, or dehiscence of prosthetic valve)	Urgent
Persistent fever and positive blood cultures for >5–7 days	Urgent
Infection caused by fungi or multidrug-resistant organisms, such as <i>Pseudomonas aeruginosa</i> and other gram-negative bacilli	Elective
Prevention of embolism	
Aortic or mitral-valve infective endocarditis with large vegetations (>10 mm in length) after one or more embolic episodes, despite appropriate antibiotic therapy, especially during the first 2 weeks of therapy	Urgent
Aortic or mitral-valve infective endocarditis with large vegetations (>10 mm) and other predictors of complicated course (heart failure, persistent infection, or abscess)	Urgent
Isolated, very large vegetations (>15 mm); surgery may be preferred if a procedure preserving the native valve is feasible	Urgent

Arrhythmia

Recommendations	Class ^a	Level ^b
Surgical ablation of AF should be considered in patients with <u>symptomatic AF undergoing cardiac surgery.</u>	IIa	A
Surgical ablation of AF may be performed in patients with <u>asymptomatic AF undergoing cardiac surgery if feasible with minimal risk.</u>	IIb	C
<u>Minimally invasive surgical ablation</u> of AF without concomitant cardiac surgery is feasible and may be performed in patients with <u>symptomatic AF after failure of catheter ablation.</u>	IIb	C

Cardiac Tumors

Table I – Primary cardiac tumors

Benign (75% of the cases)

Myxoma

Rhabdomyoma

Fibroma

Lipoma

Atrioventricular node tumor

Papillary fibroelastoma

Hemangioma

Malign (25% of the cases)

Angiosarcoma

Rhabdomyosarcoma

Fibrosarcoma

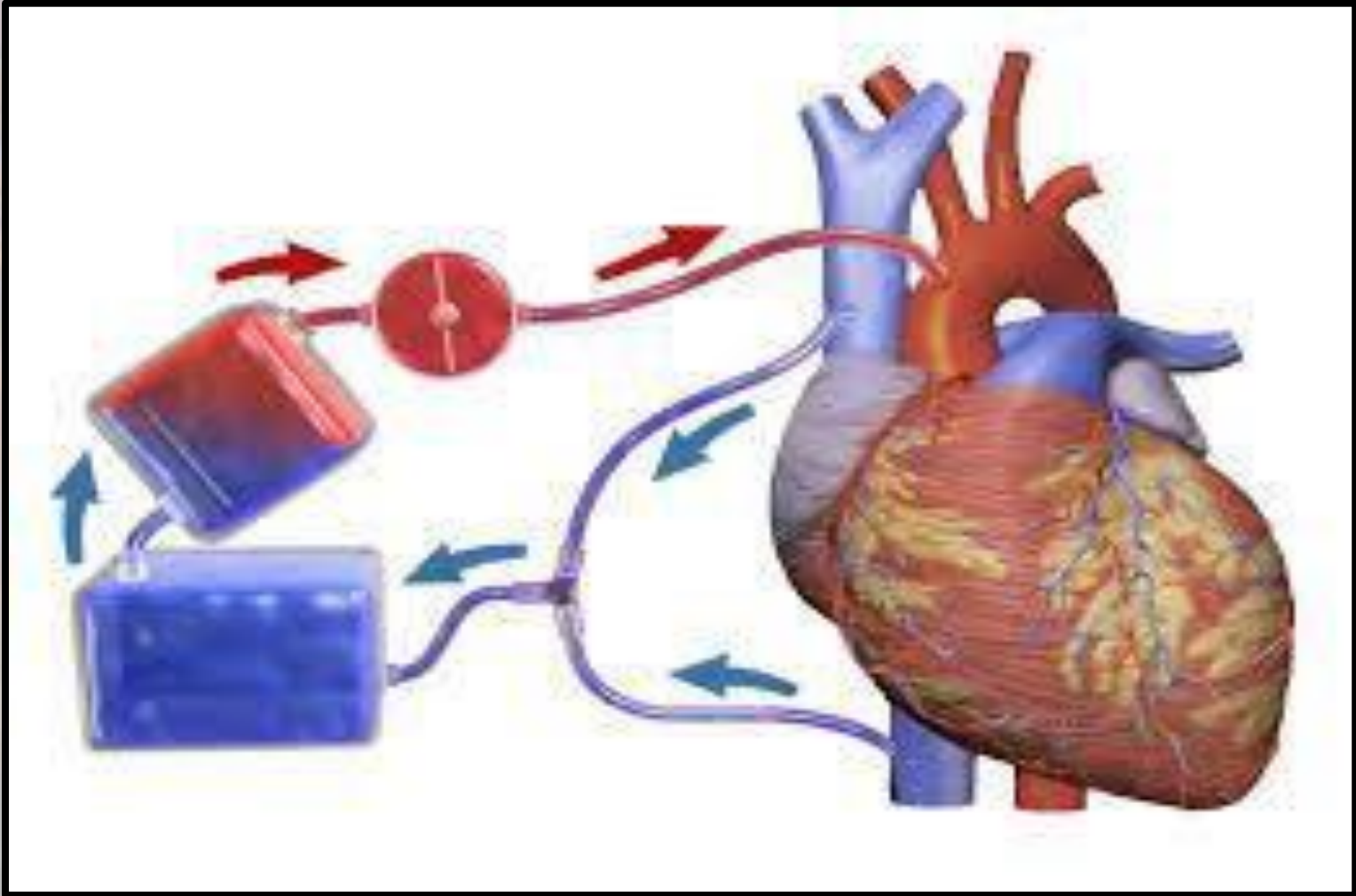


Surgical Treatment

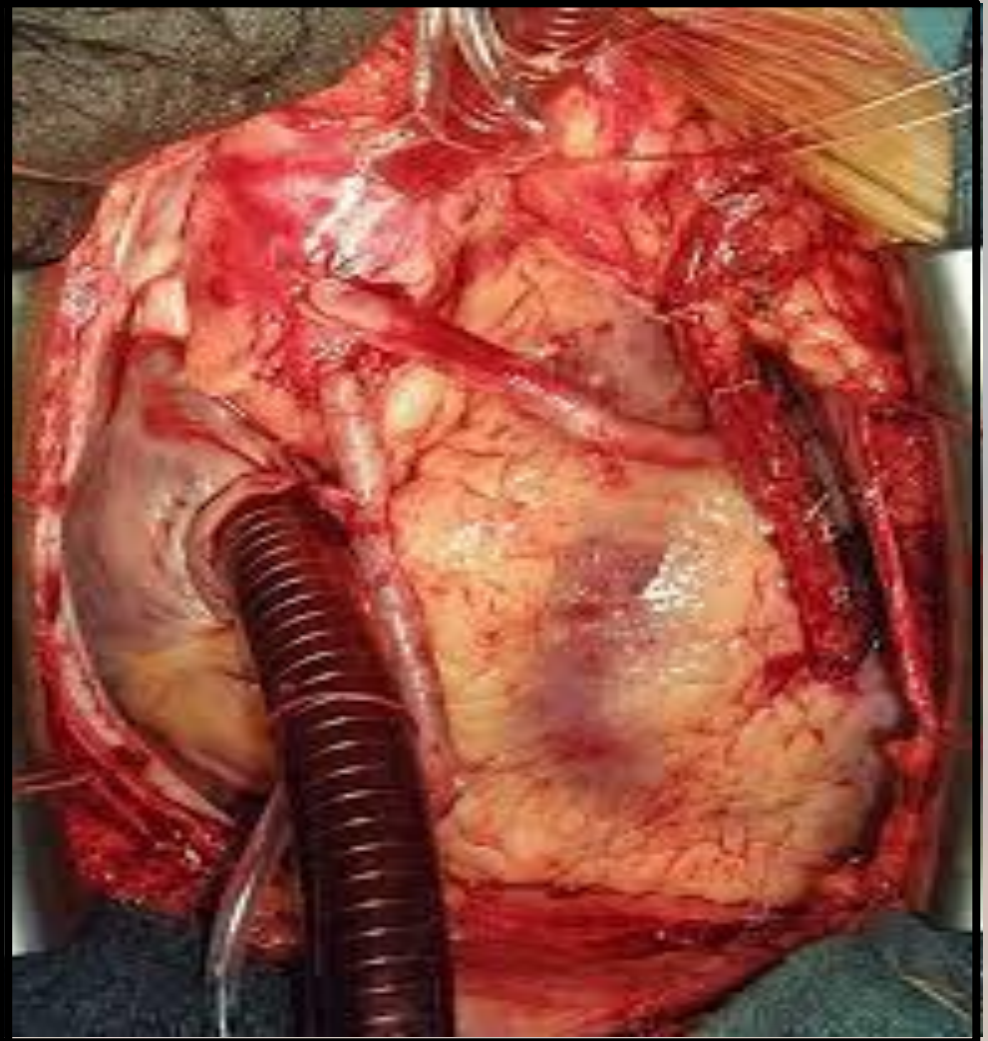
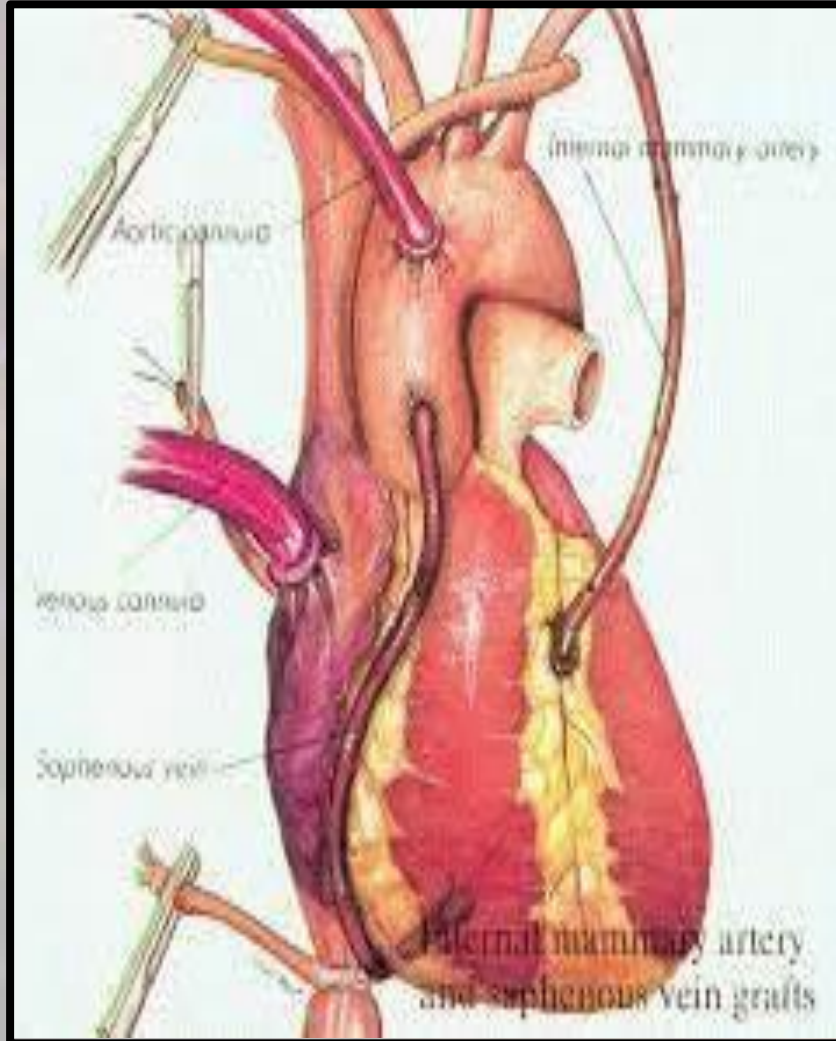
Coronary Artery Bypass Surgery



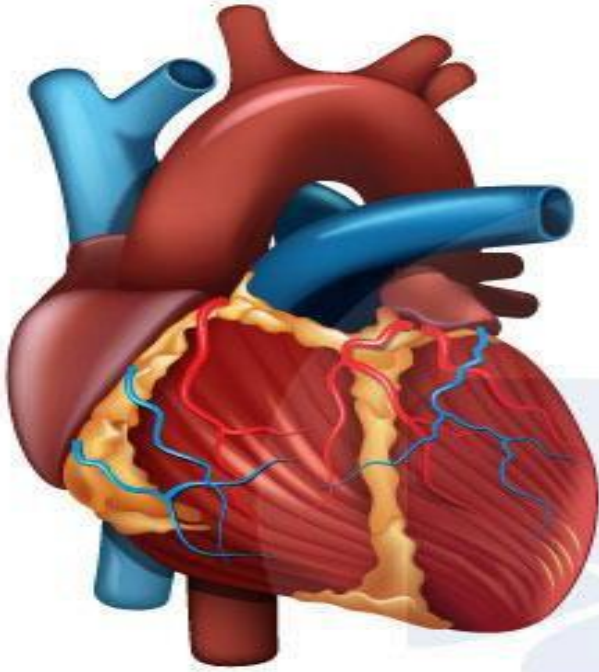
Coronary Artery Bypass Surgery



Coronary Artery Bypass Surgery



Coronary Artery Bypass Surgery



BENEFITS OF OFF PUMP CABG

Reduced incidence of stroke
& cognitive problems

Lesser renal dysfunction

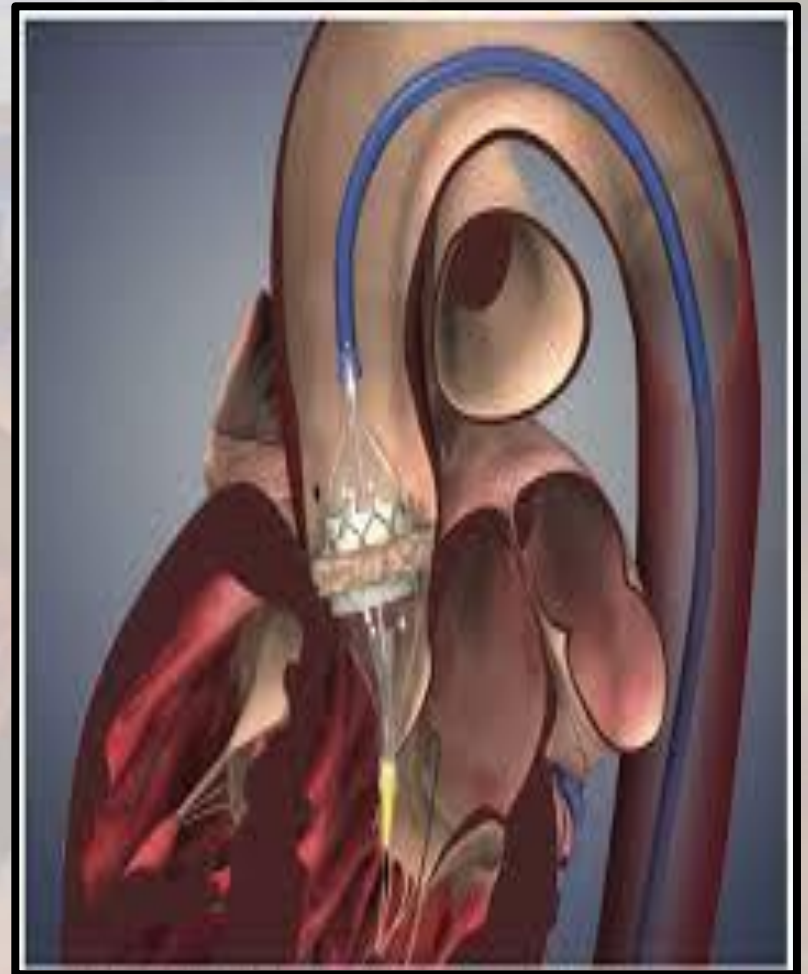
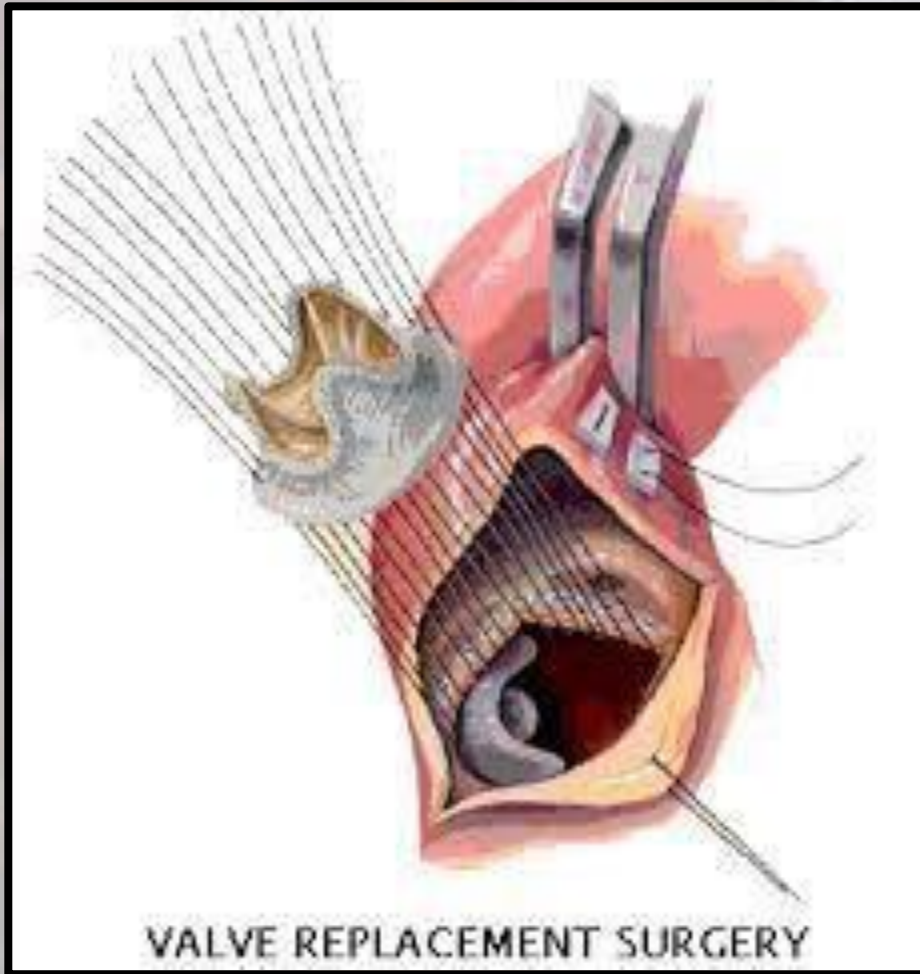
Reduced inflammatory
response

Lesser coagulopathy &
requirement of
blood transfusion

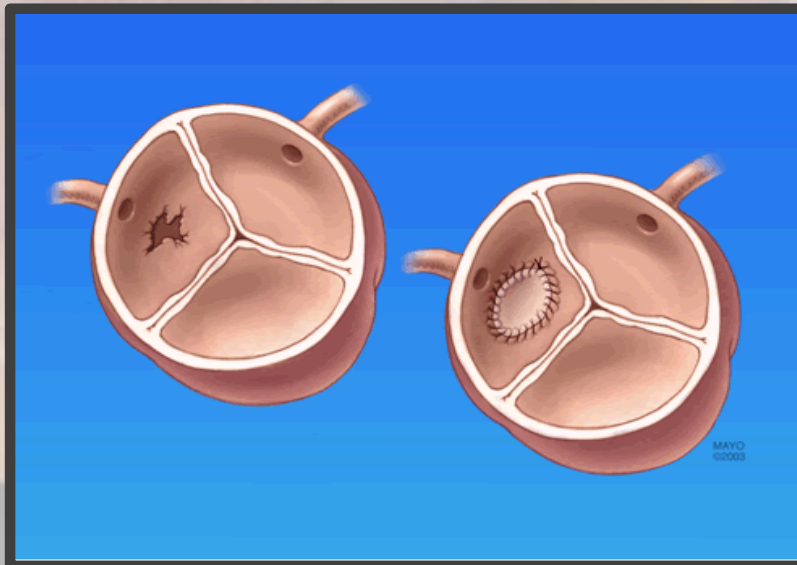
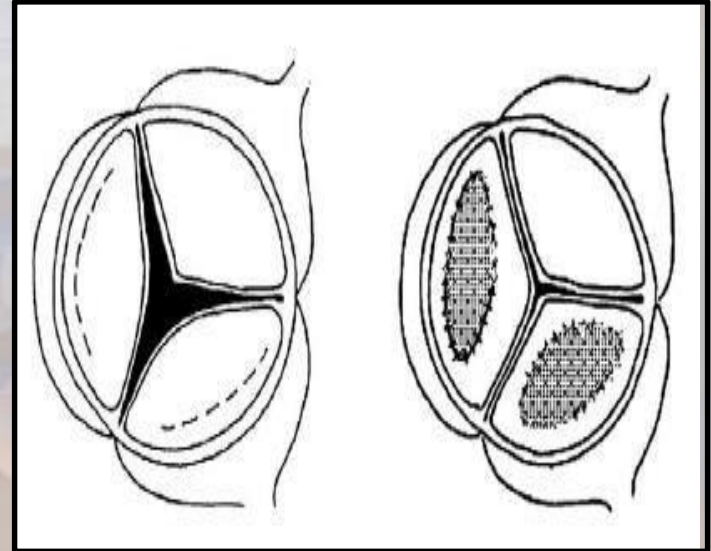
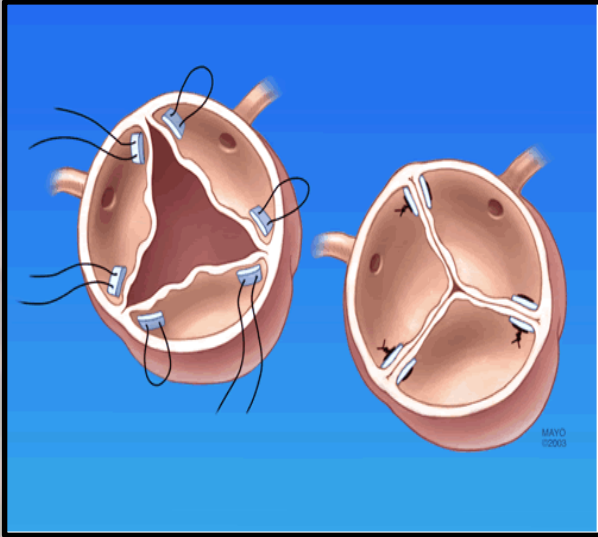
Reduced length of time in
intensive care & hospital
stays

Reduced morbidity &
mortality rates

Aortic Stenosis



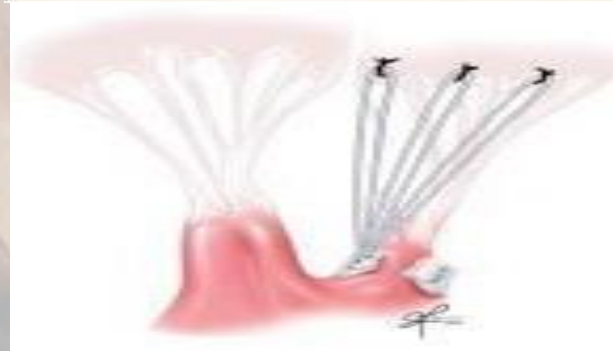
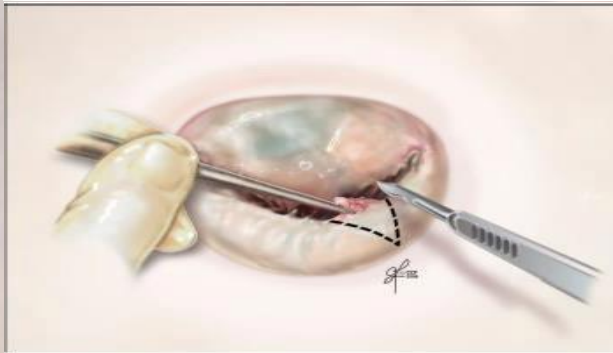
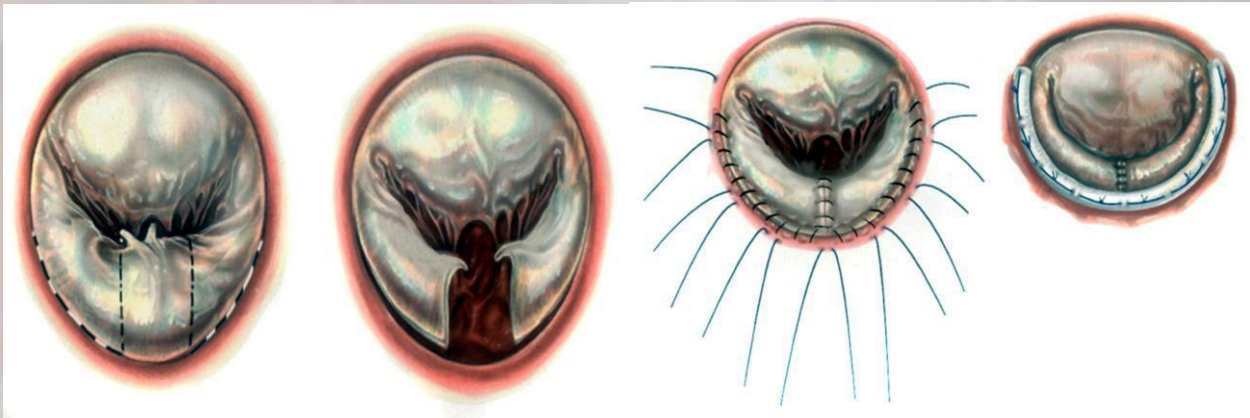
Aortic Regurgitation



Mitral Stenosis



Mitral Regurgitation



Valvular Prostheses

Prosthetic Heart Valves



Biologic

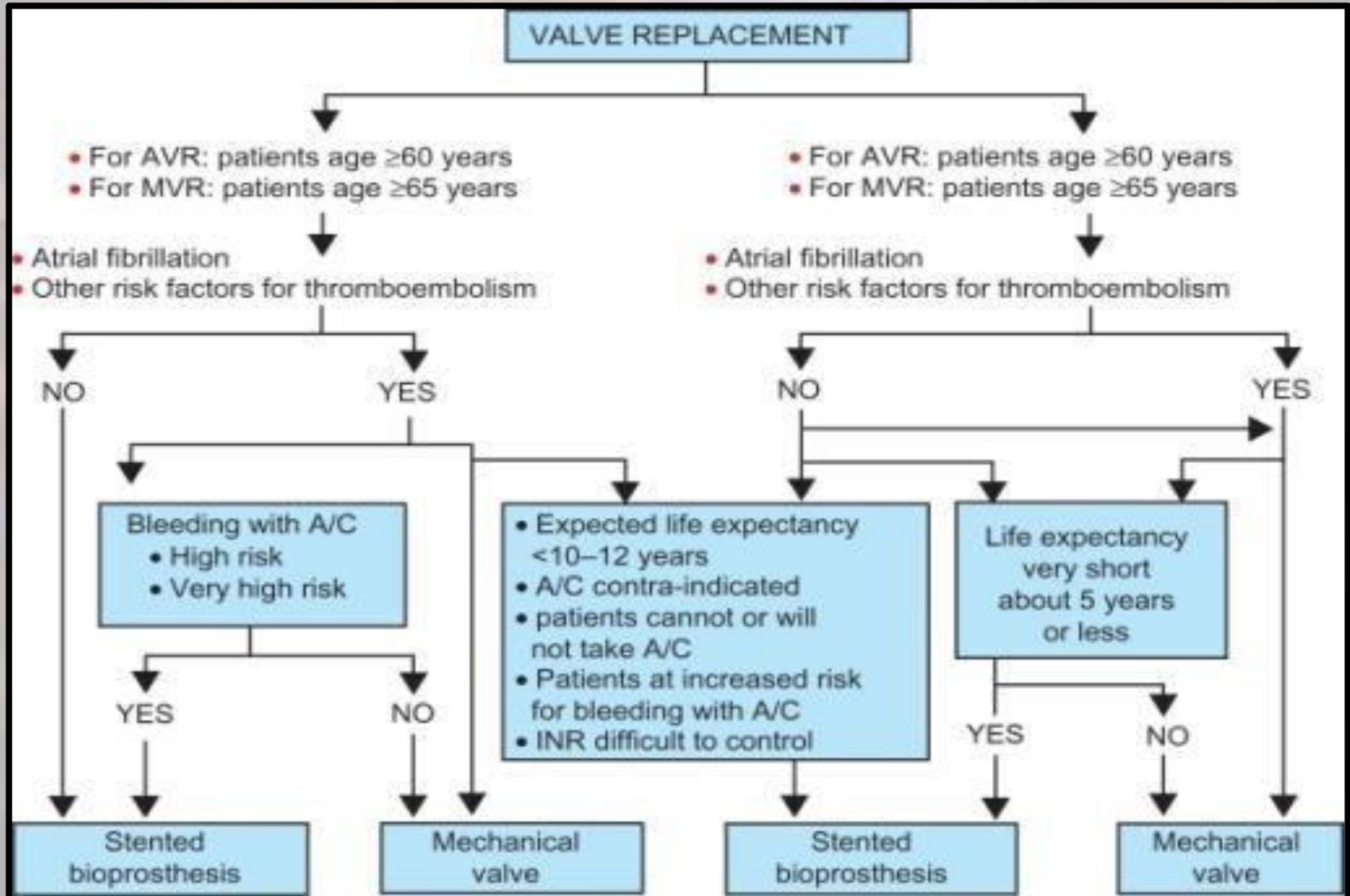
- Lasts 8-10 years
- No anticoagulation
- No Click



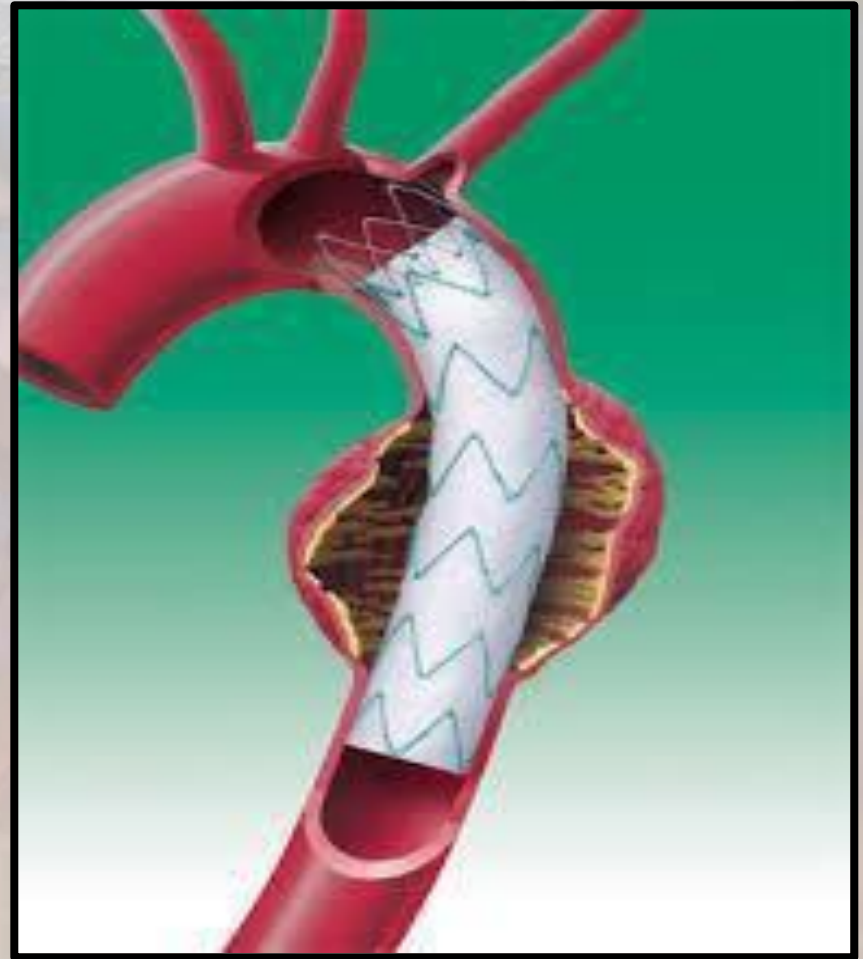
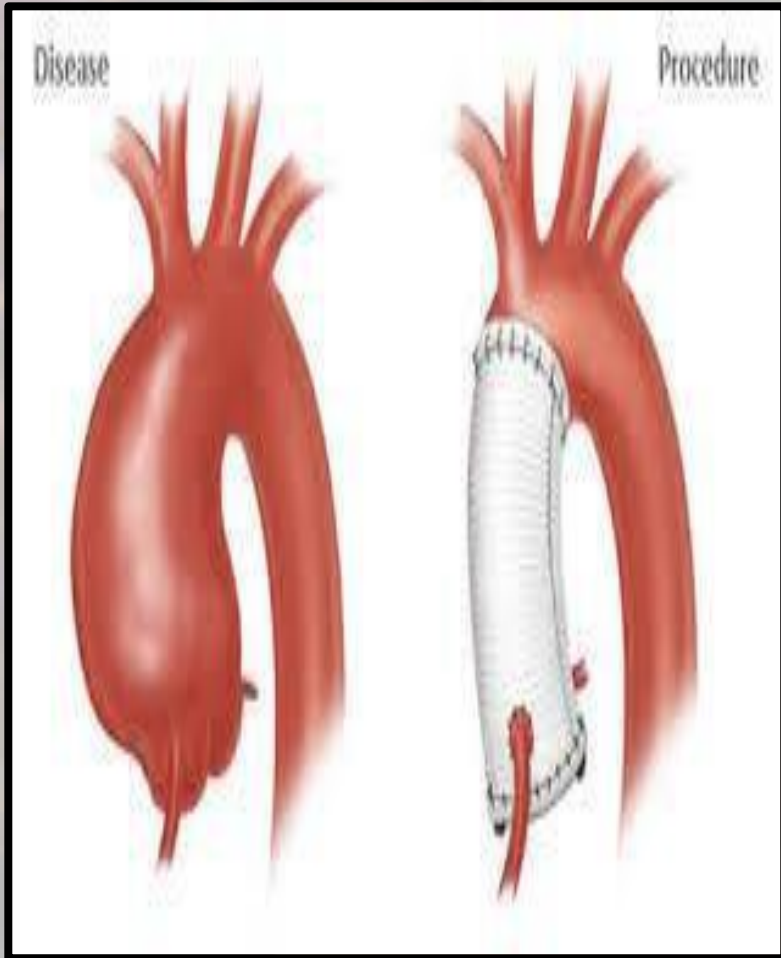
Mechanical

- Lasts > 20 years
- Lifelong anticoagulation
- Click

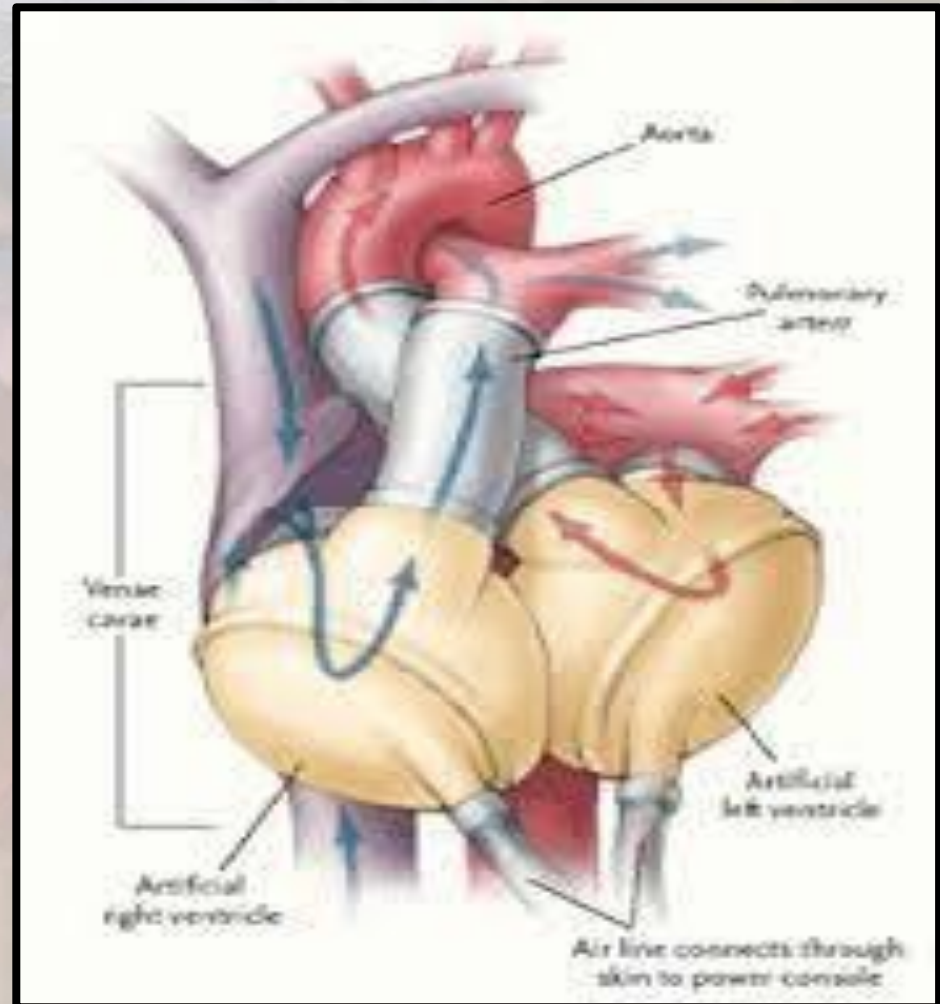
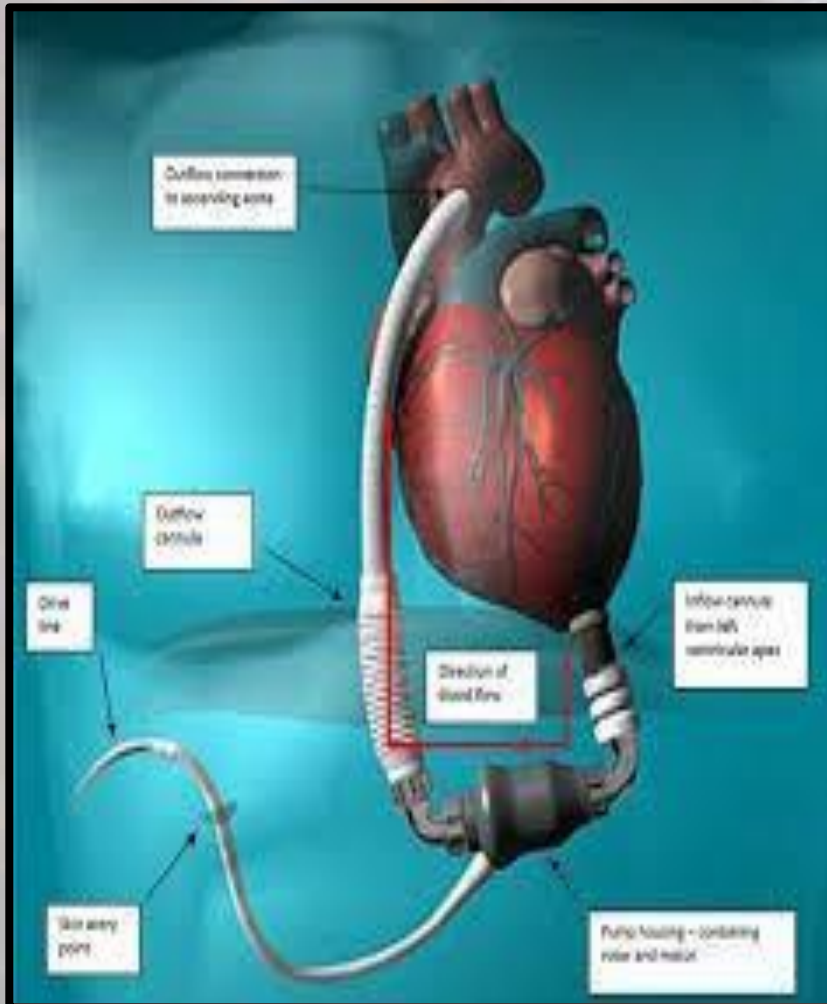
Valvular Prosthesis



Aortic Surgery

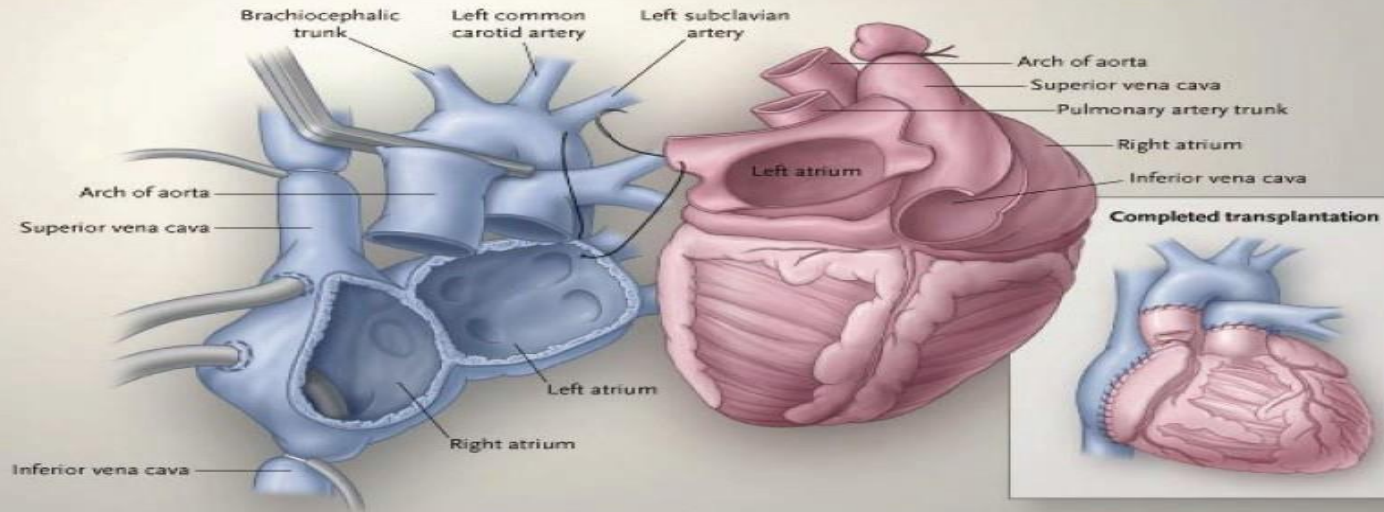


Heart Failure

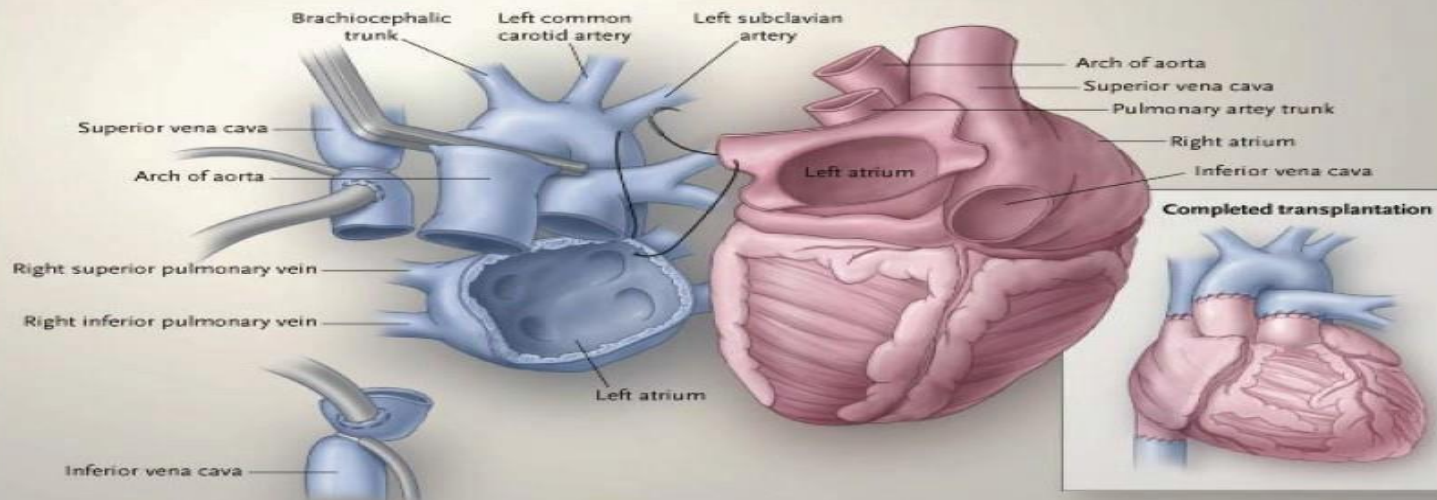


Heart Failure

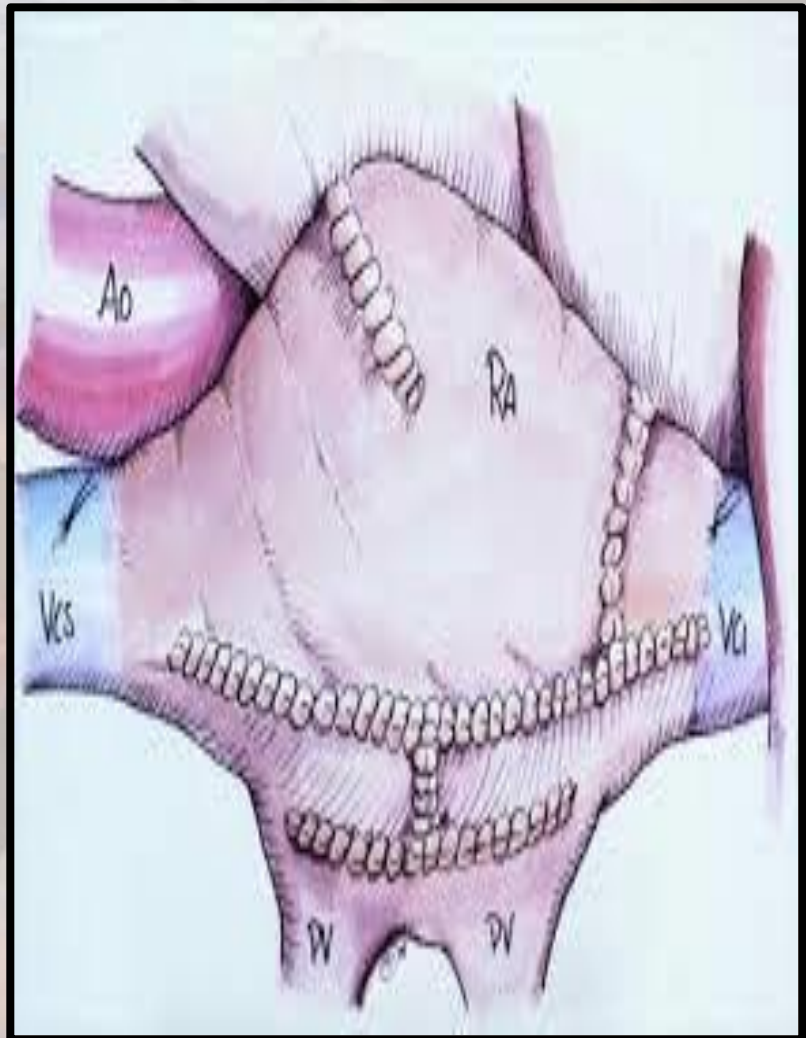
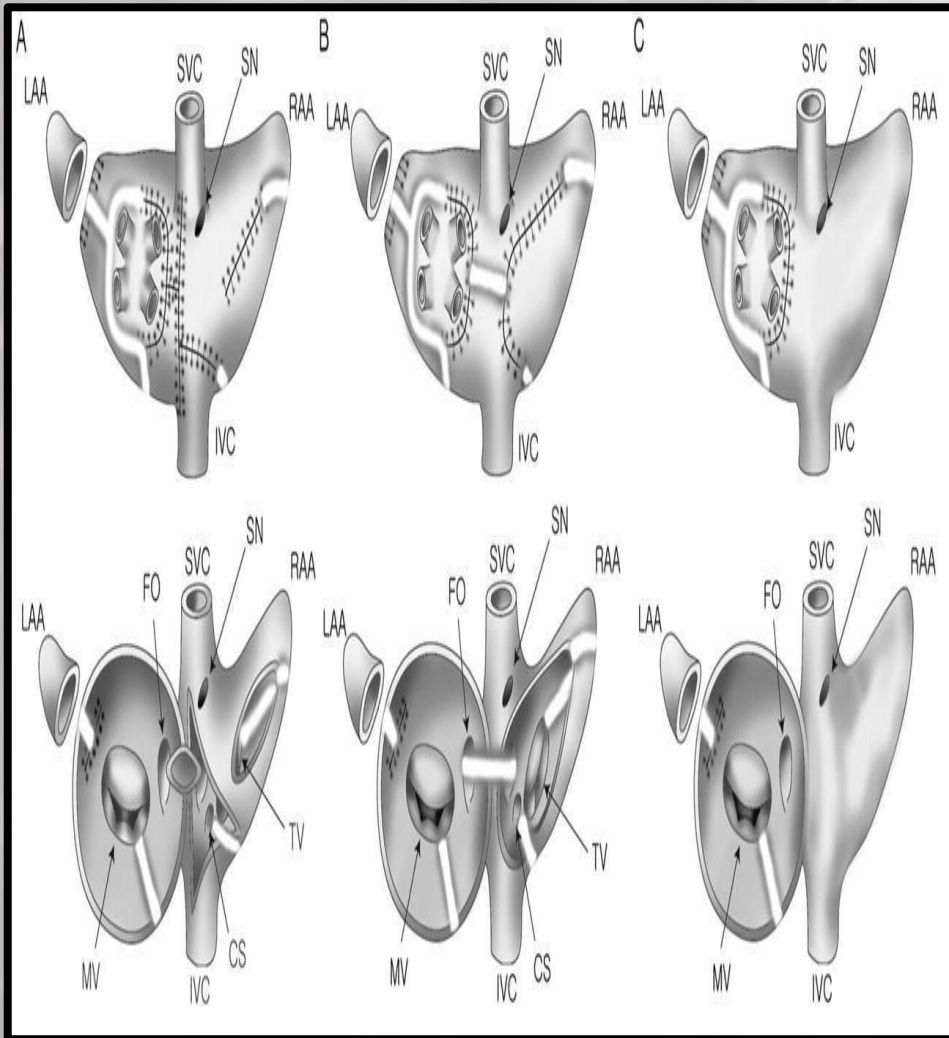
A Standard (Biatrial) Heart Transplantation



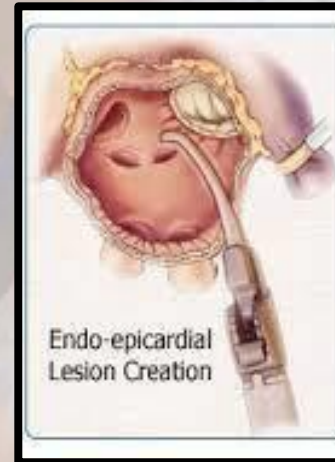
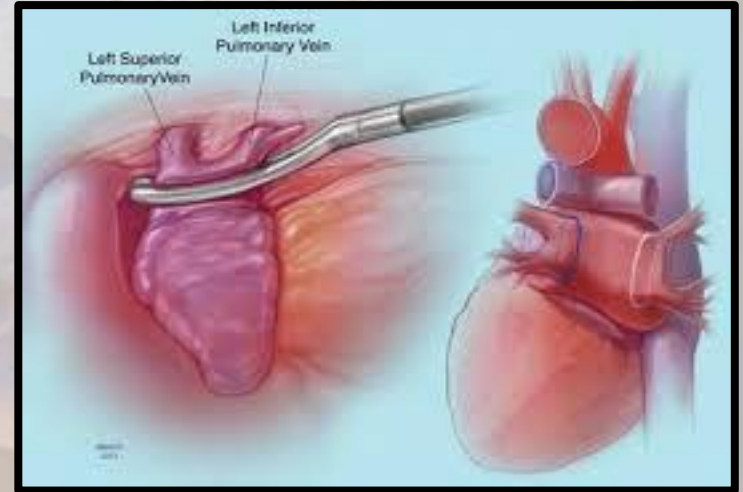
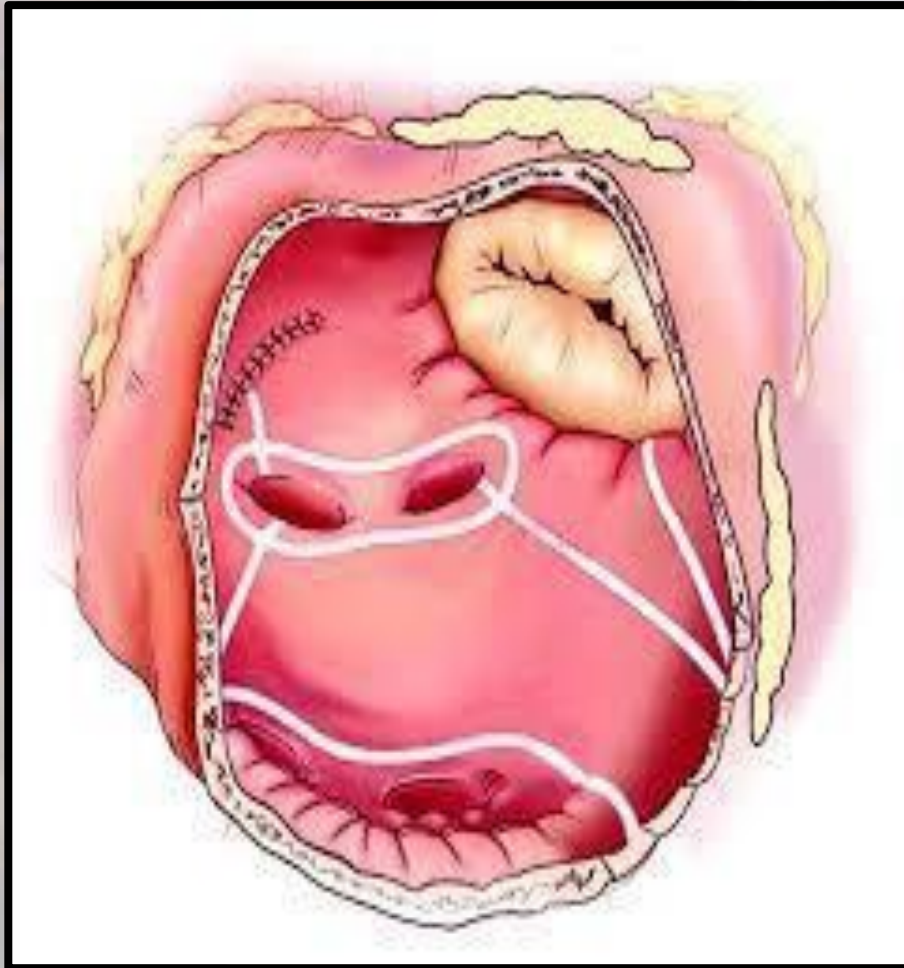
B Orthotopic Cardiac Transplantation with Bicaval Technique

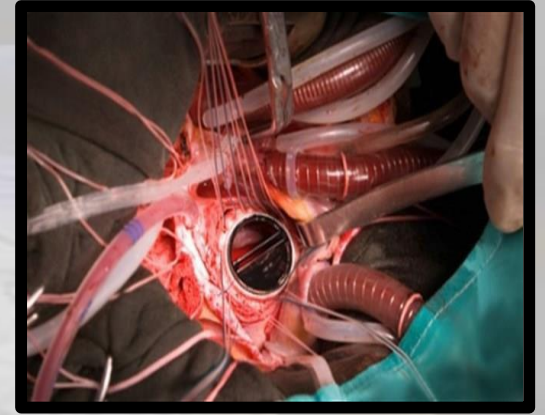
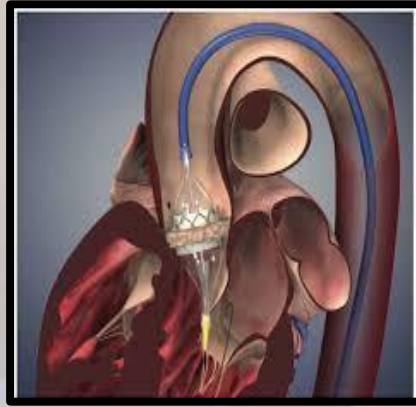
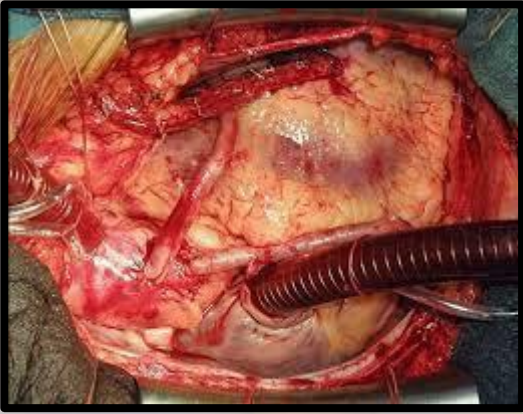


Arrhythmia Surgery



Arrhythmia Surgery





Thank You

